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ABSTRACT

This paper summarizes the 16 projects that have been funded by the Minnesota Extension Service to demonstrate innovative and effective uses of technology in adult education. Several of the projects are described in detail. Actual and anticipated impacts are examined, and suggested strategies that others can apply to reach and empower rural adult learners are identified. Formative and summative evaluation data relate strategies to specific problems identified by rural learners. Topics covered by the projects summarized include the following: satellite video teleconference on teen depression and suicide; videotapes on family stress; videotape about selecting and working with a lawyer; distance computer training via telephone; expert system on mastitis prevention; consumer information systems; Northeast Minnesota Telecommunications Network; Interactive Videodisc for pesticide applicator training; computer-accessed bulletin board service; Todd County interactive telecommunications; stored-grain management national satellite videoconference; personal computer video production of grain marketing; food and nutrition education; the home landscape; a family education project; and the audiotex system. (KC)

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Empowering the Rural Adult Learner: Problems and Strategies

a paper prepared for AAACE

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by

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The Minnesota Extension Service, like other cooperative extension programs around the country, has a special commitment to identifying and meeting the learning needs of rural adults. To assist in this effort the Telecommunications Development Center (TDC) in the Minnesota Extension Service (MES) was established in 1985 with a major grant from the W.K. Kellogg Foundation. The Center encourages use of new and emerging technologies to deliver outreach education. In meeting this goal, TDC provides training and technical support to university faculty and other educators involved in outreach education; consultation to individuals and departments on technology acquisition and use; and, small grants to projects which demonstrate innovative and effective uses of technology in adult education.

This paper will summarize the sixteen projects which have been funded and describe several in detail. Actual and anticipated impacts will be examined, and suggested strategies that others can apply to reach and empower rural adult learners will be identified. Formative and summative evaluation data relate strategies to specific problems identified by rural adult learners.

PROJECT SUMMARIES

Eight projects from the initial round of projects in 1986 are in varying stages of completion. Three of the projects are complete and some products have resulted.

TEENS IN DISTRESS:

Satellite video teleconference on teen depression and suicide.

A satellite video teleconference on teen depression and suicide originated from the University and was transmitted to eight sites in Minnesota. The evaluation of the teleconference, which was sponsored by the TDC and other University and state agencies, found that participants were very accepting of and positive toward the technology. The project resulted in a TDC-published book titled, Receiving Video Teleconferences: A Site Coordinator's Handbook. Also available for sale are a half-hour documentary (Fragile Time) and 2-1/2 hours of proceedings of the teleconference, as

well as a conference handbook.

LESS STRESS:

Videotapes on family stress.

Videotapes about family stress were produced by a grant to two county extension offices in collaboration with community education and school districts. The contents of the videotapes were transmitted via two-way interactive television. Project coordinators discovered that the project was very time-intensive and that marketing was key to its success.

MORE THAN A HANDSHAKE:

Videotape about selecting and working with a lawyer.

A videotape about selecting and working with a lawyer was targeted for rural families. The project was a collaborative effort between the TDC and the University's Law School. While the project was produced for both audio and video, a focus group preferred video, liked the call-in portion of the video, and learned something about the conflict. The videotape has been broadcast by several public television stations in the Twin Cities area and in greater Minnesota.

AUDIOGRAPHICS AND TELECONFERENCING:

Distance computer training via telephone.

One of the projects continuing from 1986 is distance computer training via telephone. A few pilots of the project have been run, and the initial results are positive. However, the technology is not yet solid enough, and the project directors are waiting for the technology to catch up.

EXPERT SYSTEM ON MASTITIS PREVENTION.

Another on-going project centers on developing an expert system, which is a computer-based technology that reasons similarly to a human expert. The project coordinators for this expert system, which is on mastitis prevention, learned much about knowledge engineering. However, they

also found that the model did not match the expert reasoning.

CONSUMER INFORMATION SYSTEMS.

This project continuing from 1986 includes an effort to develop a consumer information service that will answer by computer common questions asked of extension agents, and that will allow the agents to devote time to other areas. Two county extension offices collaborated on the project. The coordinators found that the data base required to run the system was too large. It was found that the system can handle many consumer calls adequately. Answers to approximately half of the questions asked were on the system.

NORTHEAST MINNESOTA TELECOMMUNICATIONS NETWORK.

The Northeast Minnesota Telecommunications Network is comprised of 14 agencies, including educational institutions, health care associations, a county extension office, a public television station, and a multitype library system. This project is designed to enable northeast Minnesota with an integrated telecommunications system. The coalition of the various agencies is strong. The next step is to begin work on the integrated system.

INTERACTIVE VIDEODISC FOR PESTICIDE APPLICATOR TRAINING.

A final project continuing from 1986 is an interactive videodisc for pesticide applicator training. This project is also supported by EPA (Environmental Protection Agency) and USDA (United States Department of Agriculture). The videodisc, which will help train pesticide applicators to conform to stricter EPA guidelines, is in the development phase.

Eight new projects received TDC support in 1987.

COMPUTER-ACCESSED BULLETIN BOARD SERVICE.

This project will develop and implement a computer-accessed regional bulletin board service, which is to enable rural Minnesota farm and small business operators to access existing extension educational software and informational services on both a centralized and decentralized basis. The end product is a system that would enable individuals to utilize the power of the computer and telecommunications. The project specifically addresses utilization of existing extension information by providing public access to it.

TODD COUNTY INTERACTIVE TELECOMMUNICATIONS.

The goal of this project is to train community leaders using an already available interactive television system in central Minnesota, and to develop a strategy for implementing community, economic, and social development goals by providing for community-to-community dialogue. The project will allow for the growth of a truly local development strategy.

STORED-GRAIN MANAGEMENT NATIONAL SATELLITE VIDEOCONFERENCE.

This project will provide stored-grain management programming support to extension specialists in 40 states. Minnesota hosted an EPA-sponsored national stored grain management "train the trainer" conference in September 1987. Three months after the conference, Minnesota will produce and deliver a satellite videoconference for extension nationwide. The videoconference will provide support and a focus for the training.

PERSONAL COMPUTER VIDEO PRODUCTION OF GRAIN MARKETING.

The project will develop a short video on the grain marketing outlook in a laboratory environment. The video program will be created with computer-generated graphics and a manually-operated monitor-based pointer.

EFNEP EDUCATION.

The Expanded Food and Nutrition Education Program (EFNEP) plans to transfer printed materials from the majority of lessons in a new national education curriculum to audiocassettes. This will allow individuals easier access to the education program.

THE HOME LANDSCAPE.

The project is to produce the first in a series of videotapes for the home video market on home horticulture and landscaping. University of Minnesota faculty and local professionals will provide the technical and educational expertise to produce the video. This project provides the opportunity to study new information distribution strategies.

KEEP IN TOUCH:

A family education project.

The project goal is to develop a prototype extension home economics information distribution system via selected high-circulation metropolitan public libraries in two counties. The family education project features audio and video tapes on a variety of family life education topics designed to strengthen young families through listening and discussion in the home. The tapes will be distributed with print materials to serve as a resource for family discussions.

AUDIOTEX

(joint evaluation with Wisconsin)

Using the audiotex system of University of Wisconsin-extension, Minnesota and Wisconsin will jointly evaluate the potential of this technology to handle consumer calls on a county, regional, or

state level. Audiotex is a computer-based method of delivering information via telephone lines.

DETAILED DESCRIPTIONS

Teens in Distress Satellite Video Teleconference

A statewide satellite video teleconference was chosen to evaluate the effectiveness of telecommunications in the delivery of educational programs across the state. Following six Teens in Distress conferences held in 1985-1986 throughout Minnesota, the conference, "Depression and Suicide: Responding to High Risk Youth," provided further training. The satellite video teleconference used one-way video and two-way audio systems to transmit the video and panel discussion portions of the conference from the origination site to eight receiving sites. Interaction was achieved by telephone calls from the receiving sites to the origination site. Participants included youth-serving professionals from educational, social service, health care and religious organizations.

A number of delivery systems were considered for this follow-up to the Teens in Distress conferences. The first considered was an audio conference. This was rejected because feedback from potential audiences indicated that previous experiences with audio conferences had been unfavorable; it was anticipated that an audio conference would attract fewer participants than desired.

Consideration was given to conducting alternative training sessions around the state; however, the internationally recognized content experts needed to provide the advanced training could not be scheduled for the nine proposed sites.

A one-day conference was also considered, but it was anticipated that such a conference would attract only those willing to drive from relatively close areas.

Less Stress

Stress is a major health problem. Nowhere have there been more cases of documented stress-related tragedies than in farming or rural areas where the declining farm economy has produced

emotional and financial burdens for farmers, their families, and business people. This project examined stress in the areas of parenting, finances, farming, and teen life. Project staff planned to identify stressful situations provide awareness of stressors to target populations, and gather information regarding management techniques. Specifically a four-part series on stress was produced: 1) Introduction to Stress, 2) Farm Family Stress, 3) Parenting Stress, and 4) Teen Stress. A key project component was development of a cooperative management module utilizing the resources of extension, communication education, public school and library systems, chambers of commerce, ministerial associations, emergency relief agencies, social services, civic groups, and the business community.

Several factors led project staff to explore the use of alternative technologies as a means of providing audiences with content information. Concerns focused on information delivery to audiences in multiple counties in a timely and cost effective manner. Problems such as farm family stress needed to be addressed rapidly and widely. All project staff had implemented programs on stress but found meetings poorly attended. One reason was the stigma attached to the personal subject of family stress or suicide. These topics are difficult to discuss and frequently individuals try to avoid having others discover a situation where stress or suicide may be a part of family life. A technology was needed which would respect the audience's need for privacy. A related but separate issue was the importance of providing audiences with access to experts in critical content areas. With poor attendance at meetings, project staff were reluctant to invite University faculty to attend community meetings. It wasn't possible for faculty to attend community meetings throughout the state because of time limitations.

Consumer Information System

The project was to explore the use of technology to assist extension staff in answering consumer questions. Trained volunteers in their homes would utilize computers, specifically designed computer software, and perhaps telephone call forwarding and electronic mail to answer consumers' questions. Originally the project included horticulture, but this was found to require a more

sophisticated technology.

Although the use of volunteers to answer consumer questions had already proven successful, housing volunteers within the county extension offices increased demands for space and secretarial support. Also, extension agents were accessible if a consumer's question was difficult, and volunteers had a tendency to ask the agent rather than try to find the answer on their own. Because of the capability of connecting the volunteer to the extension offices through the computer, Extension staff began to explore this system for answering consumer calls.

Audiographic Teleconferencing

The wide-spread availability of, and access to, microcomputers has led to increased applications of this technology among natural resource professionals. Current applications include determining acreages, inventorying and appraising timber stands, making decisions for regulating the forest, and economic evaluation of management alternatives. Many professionals are seeking training in microcomputer usage; however, because of the widespread distribution of these professionals, only a fraction of the audience is currently being reached. This situation also requires that the trainer or the trainees spend a large portion of their time and financial resources traveling to training sessions. This TDC project was to enable the Department of Forest Resources to conduct remote-site training sessions on microcomputer applications. Specific goals were to test and evaluate remote computer training systems to determine their effectiveness for teaching microcomputer skills to clients located in remote areas.

Currently, training natural resource professionals in computer use requires that a trainer travel to a number of different sites to conduct sessions on the same computer application. Consequently, one trainer projected that in six months his entire budget for training would be depleted. Alternatively, trainees are sent to a central site to learn computer applications and skills. These educational opportunities are limited. The general instructions to the trainers are: "They can afford only one trip; give them everything." Consequently, the trainees are presented with more material that they can assimilate.

A delivery system was desired that would allow the trainer complete control over microcomputers in remote sites. This would enable the trainer to manipulate the trainee's computers or allow the trainee to practice a computer application. The system needed to enable the trainer to capture images from any screen to monitor progress and assist in problem solving. The system also needed to enable the instructor and the trainees to interact verbally throughout the training session. Frequently, the only way to reach remote sites is through a single telephone line. Consequently, a delivery system needed to accommodate this limitation.

PROBLEMS OF RURAL ADULT LEARNERS

Needs assessments conducted with adult learners have identified a number of barriers which limit or prevent access to lifelong learning in rural areas: inadequate local infrastructures, small audiences, enormous distances between population centers, competing demands for time, unwillingness of experts/educators to travel, and perceived lack of attention to special, rural issues in existing educational programs.

In the past several years, many rural residents whether or not they are directly involved in farming, have been impacted significantly by the so-called rural crisis. Several of the projects (previously described in detail) were focused on education related to the economic disruptions and resulting stresses this crisis brought to rural communities.

Factors Related to Project Successes

Looking at formative and summative evaluations of the demonstration projects and TDC, several factors have been identified as contributing to success in meeting learner needs through technology.

Appropriate matching of learner needs, contents and technologies was characteristic of all successful projects. Project coordinators noted that use of technology forced good, advance

planning. It also gave them more control over content and content specialists who were often unfamiliar with the technologies being used.

Application of key adult learning principles was a second factor in successes. Technology use helped to make learning novel and exciting and was useful in accommodating a variety of learning styles.

Limiting Factors

Not surprisingly, the technologies themselves, when they did not work properly, were among the most frequently limiting factors. Low cost equipment was sometimes of extremely poor quality resulting in malfunctions or unusability. Some technologies were essentially still experimental at least in educational use, and project staff found themselves acting as guinea pigs for the developers.

Another factor which limited the success of some projects was a lack of clear rules and procedures governing such activities as contracting, billing and bidding. As grantees our projects were often subject to University systems designed for different situations and unfamiliar to outsiders and many insiders as well.

Suggested Strategies

TDC experiences to date suggest the following strategies be considered when new technologies are introduced in adult education.

- Allow extensive time for program design and development, even when the content has already been identified and organized.
- Select project coordinators who are willing and able to deal with the inevitable malfunctions of new and especially emerging technologies as well as all the other aspects of designing and delivering adult education.
- Provide technical and human support for demonstration project staff and learners. Written procedures, telephone "help-lines" and regular debriefing sessions could all contribute to success.

- Enlist the support and resources of technology provides (cable outlets, developers, vendors, etc.). Encourage them to view your success as one measure of their success; the education market is a potentially large and lucrative one.

- Acknowledge that learners will be interested in and perhaps even frightened by the technology. Allow time and provide mechanisms for addressing these issues. Solicit feedback from learners on their perceptions and experiences.

In conclusion, TDC has found that technologies can be effective means of reaching rural adults and meeting their education needs, but, at least initially, technology use for adult education will require greater time and resource inputs, longer lead times, and more extensive support of teachers and students than more traditional approaches. The benefit is that with technology time, distance and other barriers become surmountable.